

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Currently Amended) A method for modulating the morphology of ~~cellulose~~
softwood pulp fibers comprising the steps of

subjecting the pulp fibers to a metal ion-activated peroxide treatment carried out
at a pH of between about 1 and about 9 and

subjecting the treated pulp fibers to a refining treatment to form refined paper
making pulp fibers.

Claim 2. (Original) The method of Claim 1 wherein said metal ion is a transitional metal
ion.

Claim 3. (Original) The method of Claim 1 wherein said metal ion is iron.

Claim 4. (Original) The method of Claim 1 wherein said pH is between about 3 and about 7.

Claim 5. (Original) The method of Claim 1 wherein the fibers are subjected to the solution
at temperatures between about 40 degrees C to about 120 degrees C.

Claim 6. (Original) The method of Claim 1 wherein the fibers are subjected to the solution
for between about 10 minutes to about 10 hour.

Claim 7. (Original) The method of Claim 1 wherein said peroxide is present with said
solution at a concentration of between about 0.2% and about 5% based on pulp.

Claim 8. (Original) The method of Claim 1 wherein said metal ion is present in said
solution at a concentration of between about 0.002% and about 0.1% on pulp .

Claim 9. (Currently Amended) The method of Claim 1 wherein said pulp fibers is subjected to said solution for a time sufficient to substantially act on at least the cellulose and hemi-cellulose of the pulp, causing oxidation and oxidative degradation of cellulose fibers.

Claim 10. (Original) A softwood pulp having a modified morphology, leading to paper making properties substantially functionally equivalent to hardwood pulp papermaking properties.

Claim 11. (Original) The softwood pulp of Claim 10 wherein the fibers of said softwood pulp, after treatment, exhibit a substantially shorter fiber length and distribution, and enhanced fiber collapsibility, than prior to treatment.

Claim 12. (Original) The softwood pulp of Claim 9 wherein said pulp is oxidatively degraded relative to untreated softwood pulp.

Claim 13. (Original) The softwood pulp of Claim 10 wherein the pulp exhibits a Canadian Standard Freeness of between about 115 and about 590.

Claim 14. (Original) The softwood pulp of Claim 13 wherein the pulp exhibits a Kajaani average fiber length of between about 1.0 and 1.9 mm.

Claim 15. (Original) A pulp comprising between about 50% and 90% hardwood pulp and the remainder being softwood pulp which has been subjected to a metal ion-activated peroxide treatment carried out at a pH of between about 2 and about 9 and a refining treatment.

Claim 16. (Original) The pulp of Claim 15 wherein said metal ion is a transitional metal.

Claim 17. (Original) The pulp of Claim 15 wherein said metal ion is iron and said pH is between about 3 and about 7.

Claim 18. (Original) The pulp of Claim 15 wherein said pulp is substantially functionally equivalent to a hardwood pulp as respects the usefulness of the pulp in papermaking.

Claim 19. (Original) The softwood pulp of Claim 11 wherein the pulp is used to manufacture a paper web material.

Claim 20. (New) The method of claim 1 wherein said softwood pulp fibers are Kraft pulp fibers.

Claim 21. (New) The method of claim 1 wherein said softwood pulp fibers are Southern Pine pulp fibers.

Claim 22. (New) The method of claim 1 wherein said softwood pulp fibers are bleached pulp fibers.

Claim 23. (New) The method of claim 1 wherein said softwood pulp fibers are bleached Kraft pulp fibers.

Claim 24. (New) The method of claim 1 wherein said refined pulp fibers exhibit a substantially shorter fiber length and distribution and enhanced fiber collapsibility than prior to treatment.

Claim 25. (New) The method of claim 1 wherein said refined pulp fibers exhibit paper making properties substantially functionally equivalent to hardwood pulp papermaking properties.

Claim 26. (New) The method of claim 1 wherein subjecting comprises treating said pulp fibers with a composition comprising peroxide and metal ions.

Claim 27. (New) The method of claim 1 wherein said metal ions are selected from the group consisting of iron, copper, cobalt or a combination of two or more thereof.